Antiplatelet Therapy for Peripheral Artery Disease: An Interview With Craig Walker, MD

Interview by Jennifer Ford

Vascular Disease Management speaks with Craig Walker, MD, clinical professor of medicine at Tulane University School of Medicine and Louisiana State University School of Medicine in New Orleans, and founder, president, and medical director of the Cardiovascular Institute of the South in Houma, Louisiana.

Q: Can you give a brief history or comment on the emergence of endovascular interventions in the treatment of peripheral arterial disease (PAD) and critical limb ischemia (CLI)?

A: Endovascular treatments of peripheral arterial disease have increased dramatically in the past decade. Endovascular procedures are much less invasive and have shorter recovery times. Endovascular procedures can be performed in critically ill patients who are often deemed “too sick” for classical surgical procedures and can be performed in patients who are poor surgical candidates because of poor outflow or lack of appropriate conduit.

Although some interventional procedures historically have had poorer long-term patency than surgical bypass, recent technological breakthroughs, such as better stent designs, drug-eluting stents, covered stents, and drug-eluting balloons, have narrowed that gap. Another factor fueling the growth in endovascular technique is that often PAD is a progressive disease. Endovascular techniques can be repeated more easily.

Q: Does your hospital have standard guidelines or protocols for the diagnosis and treatment of PAD?

A: We do not have standard guidelines that are written at our hospital. When we developed our endovascular program, interventionalists and classic open surgical vascular surgeons met and reviewed all early cases and followed outcomes. At this time, we are mostly an interventional-first approach hospital, but open surgery remains vital.

Q: The 2011 American College of Cardiology Foundation/American Heart Association guidelines have a Class I recommendation, Level of Evidence A for antiplatelet therapy in individuals with symptomatic atherosclerotic lower-extremity PAD. Can you comment on the importance of having a strong antiplatelet agent on board during peripheral vascular interventions?

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**A:** There are numerous publications showing that patients with PAD are more prone to thrombus formation even without intervention. Many are also diabetic. Intervention induces local injury, which further activates the clotting cascade.

**Q:** What is the typical access route(s) that you use in peripheral vascular interventions?

**A:** At present, the most common access is either antegrade or retrograde femoral but there is a growing segment of direct pedal access and brachial access. Many interventionalists utilize the radial approach in some cases, but equipment delivery length is not adequate at present for utilization of the radial approach in superficial femoral, popliteal, or infrapopliteal artery disease treatment.

**Q:** What, if any, benefits are there to using alternative approaches/access sites (e.g., pedal access, upper extremity arterial access) vs the femoral access site? Do the clinical and safety benefits associated with pedal/radial access allow the operator to use more aggressive antiplatelet therapy? Which PAD patients would benefit from this more aggressive antiplatelet treatment strategy?

**A:** Pedal and radial arterial access have far less associated bleeding complications. Pedal access facilitates lesion crossing in many cases. Upper-extremity access may be utilized when the contralateral approach is not feasible.

**Q:** Which is your preferred anticoagulant during peripheral vascular interventions: heparin or bivalirudin?

**A:** At this time bivalirudin does not have a peripheral FDA indication but I use it in any patient with a history of heparin-induced thrombocytopenia and active thrombus.

**Q:** Which are the standard antiplatelet agents that you use during peripheral vascular interventions (aspirin, choice of oral P2Y12 agent)? What are the benefits of having a GP IIb/IIIa inhibitor available during the peripheral vascular intervention?

**A:** I typically have patients on aspirin and an oral P2Y12 inhibitor prior to starting the procedure when there is active thrombus or impaired flow. When there is no reflow I utilize GP IIb/IIIa inhibitors administered into the artery to achieve high local concentrations of the agent, which has been previously reported to occasionally result in thrombus dissolution.
Q: Which GP IIb/IIIa inhibitor do you and other interventionalists at your hospital use in peripheral interventions? Why did you choose tirofiban as your preferred GP IIb/IIIa inhibitor, over other agents in the class, such as eptifibatide and abciximab, in PAD cases?

A: I presently most frequently utilize tirofiban in my peripheral interventions where I utilize a GP IIb/IIIa agent. I don’t typically utilize abciximab, because it is murine derived and repeat administration may have allergic consequences (PAD patients often undergo many interventions). I have found that locally administered tirofiban causes less pain compared to eptifibatide due to eptifibatide’s acidic pH and is presently less expensive than either eptifibatide or abciximab.

Q: What is the benefit of using tirofiban (or any GP IIb/IIIa inhibitor) over a thrombolytic in these procedures?

A: Thrombolytic drugs can be life and limb saving but they are associated with risk of serious bleeding. Locally administered doses of a GP IIb/IIIa inhibitors in our experience have far less bleeding complications and are less expensive.

Q: In your practice, in what subset of PAD patients or under what clinical circumstances would tirofiban be used in an interventional procedure?

A: I utilize locally administered tirofiban in all patients who have “no reflow.” I also frequently use this agent systemically in CLI patients with severe diffuse disease and poor flow.

Q: How is tirofiban typically dosed at your hospital in the PAD setting (i.e. number of boluses delivered, infusion duration, and so on)? Is this different from how tirofiban typically is dosed at your hospital in the acute coronary syndrome (ACS) setting?

A: It is administered differently than in the ACS setting, particularly in cases with no reflow. In no reflow, we give the bolus directly into the affected artery and often repeat if necessary to achieve flow. In cases of diffuse disease where the drug is started after access, tirofiban is given in the same manner as used in the ACS setting (25 mcg/kg bolus plus 0.15 mcg/kg/min infusion).

Q: Avoiding or delaying limb amputation is central to peripheral interventions. Can administering a GP IIb/IIIa inhibitor, like tirofiban, help in achieving either of these clinical goals?

A: More data are needed to sufficiently answer this question, but having a patent vessel post intervention is paramount to achieving success, and tirofiban administration does seem to facilitate that.

Q: What is your experience with tirofiban dissolving an existing thrombus in the PAD setting?

A: In cases of acutely formed (thrombin-rich) thrombus created by local injury, I have noted excellent success in thrombus dissolution. I have not found this to be very helpful in treating old, organized thrombus.
Q: How was the transition to the use of tirofiban high-dose bolus (HDB) regimen at your hospital? Have you been able to quantify any benefits with tirofiban use compared to eptifibatide, such as patient experience and/or cost savings?

A: We are presently analyzing our data. Both of these drugs are effective but tirofiban is associated with less cost per dose and much less pain due to its near-neutral pH.

Q: Is there a risk of stent thrombosis in PAD patients? If yes, how do you recommend adjusting pharmacotherapy to prevent it?

A: Stent thrombosis is a risk in PAD patients but this is typically more of a chronic than an acute problem. In the acute setting it is often associated with an outflow problem.

Q: Are there concerns for increased bleeding rates in certain groups of PAD patients? How do you mitigate the risk of bleeding, especially when using potent inhibitors of platelet aggregation, like GP IIb/IIIa inhibitors?

A: Patients with PAD are more likely to bleed. Careful access and postprocedure access management are crucial.

Q: Are there any specific considerations or differences in the use of tirofiban in ACS patients undergoing PCI versus PAD patients undergoing PPI?

A: Patients having peripheral interventions are at greater risk of bleeding and thrombotic complications. Typically, larger sheaths are utilized and the access vessels are more diseased and less elastic. Careful access management is crucial.

Editor's note: Disclosure: Dr. Walker reports no disclosures related to the content herein.

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REFERENCES